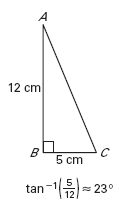
**Extended HW Week 23 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



**Can you solve a right triangle if you only know the measures of two sides of the triangle?**

To *solve a right triangle* means to find the measures of all of its sides and angles. If you know the measures of two sides, you can find the measure of an angle by finding the inverse of a trigonometric ratio on a calculator. For example, to find the measure of  *A,* you would use a calculator to find the inverse tangent ratio of .

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**STEP 1**

**Draw a right triangle**

Use your metric ruler and protractor to draw a right triangle that has legs that are a whole number of centimeters long. Name the vertices *D, E,* and *F,* with *E* being the right angle. Write the lengths of sides and

*EF*

*DE*

next to them.

**STEP 2**

**Calculate hypotenuse**

Use the Pythagorean Theorem to find the length of the hypotenuse, Write the length in simplified radical form.

*DF*

**STEP 3**

**Find angle measures**

Use inverse trigonometric ratios to find the measures of angles *D* and *F.*

**Use your observations to complete the following. Answer in COMPLETE SENTENCES.**

1. Which inverse trigonometric ratio did you use to find the measure of *D?* Why?
2. Which inverse trigonometric ratio did you use to find the measure of *F?* Why?
3. Can you solve a right triangle if you only know the measures of two sides of the triangle? *Explain* your answer.
4. For this exploration, you knew the measures of the two legs of *ΔDEF.* Can you solve a right triangle if you know the measures of one leg and the hypotenuse? *Explain* your answer.